

WHAT IS CLAIMED IS:

1. A silicon controlled rectifier structure comprising:
 - a semiconductor region of a first conductivity type;
 - 5 a semiconductor region of a second conductivity type that contacts the semiconductor region of the first conductivity type;
 - a first region of the first conductivity type that contacts the semiconductor region of the second conductivity type and is spaced apart from the semiconductor region of the first conductivity type, the first
 - 10 region having a first length;
 - a second region of the second conductivity type that contacts the semiconductor region of the second conductivity type and is spaced apart from the semiconductor region of the first conductivity type, the second region having a second length and being spaced apart from the first region,
 - 15 the first and second lengths being measured along substantially parallel lines; and
 - a first isolation section that contacts the semiconductor material of the second conductivity type and the first region; and
 - a second isolation section that contacts the semiconductor region of
 - 20 the second conductivity type, the first region, and the second region, the first region lying between the first and second isolation sections.
2. The silicon controlled rectifier structure of claim 1 wherein the first length is substantially longer than the second length.
- 25 3. The silicon controlled rectifier structure of claim 2 and further comprising a third isolation section that contacts the first and second isolation sections and isolates the first region from the second region.

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4. The silicon controlled rectifier structure of claim 3 wherein the second region lies between the first and second isolation sections.

5. The silicon controlled rectifier structure of claim 4 and
5 further comprising:

a third region of the first conductivity type that contacts the semiconductor region of the first conductivity type and is spaced apart from the semiconductor region of the second conductivity type, the third region having a third length;

10 a fourth region of the second conductivity type that contacts the semiconductor region of the first conductivity type and is spaced apart from the semiconductor region of the second conductivity type, the fourth region having a fourth length and being spaced apart from the third region; and

15 a fourth isolation section that contacts the semiconductor material of the first conductivity type, the third region, and the fourth region, the fourth isolation section lying between the third and fourth isolation sections.

20 6. The silicon controlled rectifier structure of claim 5 wherein the fourth region contacts the first isolation section.

7. The silicon controlled rectifier structure of claim 6 wherein the fourth length is longer than the first length, substantially longer than
25 the second length, and substantially equal to the third length.

8. The silicon controlled rectifier structure of claim 7 wherein:
the first and second regions are electrically connected together;
and
30 the third and fourth regions are electrically connected together.

9. The silicon controlled rectifier structure of claim 5 and further comprising:

5 a fifth region of the second conductivity type that contacts the semiconductor region of the first conductivity type and the semiconductor region of the second conductivity type, the fifth region having a fifth length, the fourth length and the fifth length being substantially equal.

10 10. The silicon controlled rectifier structure of claim 9 and further comprising:

a channel region located between the fourth and fifth regions;
a layer of gate oxide formed over the channel region; and
a gate formed on the layer of gate oxide over the channel region.

15 11. The silicon controlled rectifier structure of claim 10 wherein:
the first and second regions are electrically connected together;
and

the third and fourth regions are electrically connected together.

20 12. The silicon controlled rectifier structure of claim 3 and further comprising a third region of the first conductivity type that contacts the semiconductor region of the second conductivity type and is spaced apart from the semiconductor region of the first conductivity type, the third region having a third length.

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13. The silicon controlled rectifier structure of claim 12 wherein the third region contacts the first isolation section.

14. The silicon controlled rectifier structure of claim 13 wherein the third length is longer than the first length, and substantially longer than the second length.

5 15. The silicon controlled rectifier structure of claim 14 and further comprising a fourth region of the second conductivity type that contacts the first region, the fourth region having a fourth length, wherein:
 the first and second regions are electrically connected together;
 and
10 the third and fourth regions are electrically connected together.

16. The silicon controlled rectifier structure of claim 5 wherein the first, second and fourth isolation sections are substantially parallel.

15 17. The silicon controlled rectifier structure of claim 12 wherein a shortest distance between the first region and the second region, and a shortest distance between the first region and the third region are substantially equal.

20 18. The silicon controlled rectifier structure of claim 1 wherein the first length and the second length are substantially equal, and further comprising:

 a first layer of metal silicide formed on the first region;
 a second layer of metal silicide formed on the second region, the
25 first and second layers of metal silicide being spaced apart;
 a layer of isolation material formed on the first and second layers of metal silicide; and
 a plurality of contacts formed through the layer of isolation material to be electrically connected to the first and second regions via the first and
30 second layers of metal silicide, respectively, the first layer of metal silicide

being connected to ten times or more contacts than the second layer of metal silicide.

19. The silicon controlled rectifier structure of claim 18 wherein
5 the first layer of metal silicide has a first contiguous area, and the second layer of metal silicide has a second contiguous area that is one-tenth or less the first contiguous area.

20. The silicon controlled rectifier structure of claim 19 wherein
10 the second region includes a first section with a third contiguous area and heavy dopant concentration, and a second section with a fourth contiguous area and a dopant concentration that is less than the first section and greater than the semiconductor region of the second conductivity type.

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21. The silicon controlled rectifier structure of claim 4 and further comprising a third region of the first conductivity type that contacts the semiconductor region of the first conductivity type and is spaced apart from the semiconductor region of the second conductivity type, the third
20 region having a third length, the first and third lengths being substantially equal, the second length being less than the first and third lengths, the first, second, and third lengths being measured along substantially parallel lines.

22. The silicon controlled rectifier structure of claim 21 wherein
25 a longitudinal centerline of the first region passes through the second region.

23. The silicon controlled rectifier structure of claim 2 wherein a longitudinal centerline of the first region does not pass through the second region.

5 24. The silicon controlled rectifier structure of claim 18 and further comprising:

 a first metal region formed on the layer of isolation material that is connected to the contacts that are electrically connected to the first region;

10 a second metal region formed on the layer of isolation material that is connected to the contacts that are electrically connected to the second region; and

 a resistor connected to the first and second metal regions.

15 25. The silicon controlled rectifier structure of claim 24 and further comprising a capacitor connected to the resistor and the second metal region.

 26. The silicon controlled rectifier structure of claim 25 and
20 further comprising an active circuit connected to the capacitor, the resistor, and the second metal region.